

# VU Research Portal

## **Supply of and demand for e-services in the cultural sector: Combining top-down and bottom-up perspectives**

Nijkamp, P.; Bruinsma, F.R.; Kourtit, K.; van Leeuwen, E.S.

2011

### **document version**

Early version, also known as pre-print

[Link to publication in VU Research Portal](#)

### **citation for published version (APA)**

Nijkamp, P., Bruinsma, F. R., Kourtit, K., & van Leeuwen, E. S. (2011). *Supply of and demand for e-services in the cultural sector: Combining top-down and bottom-up perspectives*. (Research Memorandum; No. 2011-17). FEWEB VU University.

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

### **E-mail address:**

[vuresearchportal.ub@vu.nl](mailto:vuresearchportal.ub@vu.nl)

# **Supply of and demand for e-services in the cultural sector: combining top-down and bottom-up perspectives**

**Research Memorandum 2011-17**

**Peter Nijkamp  
Frank Bruinsma  
Karima Kourtit  
Eveline van Leeuwen**

SUPPLY OF AND DEMAND FOR E-SERVICES IN THE CULTURAL SECTOR:  
COMBINING TOP-DOWN AND BOTTOM-UP PERSPECTIVES

Peter Nijkamp  
Frank Bruinsma  
Karima Kourtit  
Eveline van Leeuwen

VU University Amsterdam  
Department of Spatial Economics  
De Boelelaan 1105  
1081 HV Amsterdam  
The Netherlands  
[pnijkamp@feweb.vu.nl](mailto:pnijkamp@feweb.vu.nl)

***Abstract***

The ISAAC project has generated a wealth of new insights on cultural tourism<sup>1</sup>. Particular attention has been paid to the strategic and operational importance of e-services in various European cities. The present paper brings together empirical insights from two angles, *viz* the supply and demand side, for the city of Amsterdam. First, a scenario analysis based on assumptions concerning the future development – followed by a multi-criteria analysis, in particular the Regime method – is performed in order to design and evaluate systematically packages of e-services for urban tourism policy. On the demand side results from a survey among visitors in Amsterdam are presented, with the aim to identify the most prominent attractiveness features in the city of Amsterdam, seen from the perspective of e-services for the tourist sector.

---

<sup>1</sup> ISAAC (Integrated e-Services for Advanced Access to heritage in Cultural tourist destinations) is an EU project that aims to evaluate the advantages, failure facts and barriers related to the introduction of integrated e-services in tourist places, with a particular view to the enhancement of advanced access to cultural heritage in cities.

**Keywords:** e-services, cultural heritage, multi-criteria analysis, Regime analysis, scenarios, ordered logit model

**Biographical notes:**

*Peter Nijkamp* is a Professor in regional and urban economics and in economic geography at the VU University, Amsterdam. He has a broad expertise in the area of public policy, services planning, infrastructure management and environmental protection. In 1996, he was awarded the most prestigious scientific prize in the Netherlands, the Spinoza award.

*Karima Kourtit* is a Researcher at the Department of Spatial Economics of the VU University, Amsterdam.

*Frank Bruinsma* is affiliated as associate professor at the Department of Spatial Economics of the VU University, Amsterdam.

*Eveline van Leeuwen* is a senior researcher (assistant professor) at the Department of Spatial Economics of the VU University, Amsterdam. In 2002 she finished her masters education in spatial planning at Wageningen University, after which she went to the VU University in Amsterdam, to work as a junior researcher on mainly EU-funded projects. In 2008 she defended her PhD thesis about the importance of towns in rural Europe. Since January 2010, Eveline is also a visiting assistant research professor at the Regional Economics Applications Laboratory (REAL) at the University of Illinois.

## 1. INTRODUCTION

Tourism has become an economic sector of prominent importance in the past decades. Leisure time, transportation and communication systems, welfare rise and digital support systems have contributed to a rise in tourist visits world-wide. An increasingly important attraction force for modern mass tourism stems from cultural heritage in many cities (see also Fusco Girard and Nijkamp, 2009).

Cultural heritage is not just a ‘soft’ historical asset or petrified resource from the past, but plays an active role in a modern open space-economy. In today's turbulent and competitive business world, modern cities and regions, are challenged to constantly innovate and improve the quality of their products and services in order to stay ahead of the fierce competition in which the

combined pressures of economic liberalization, increased globalization, technological change and shifts in regulatory systems lead to a complex local-global action space (the ‘New Economy’) (see Matias et al., 2008). The world of business environments in modern economies and cities – including the tourist industry - has changed dramatically the strategies of promoting cities and pursuing business (Spence 2004). It depends nowadays heavily on the performance in generating, combining and utilizing new knowledge, imagination, creativity, innovations and technologies (Forte et al. 2006). Besides, our globalizing world has induced a high degree of geographical mobility, be it temporary (e.g. tourism) or permanent (e.g. immigration). Tourism in our modern world has many appearances, but a significant part of tourism is due to the attractiveness of cultural capital (e.g. cultural heritage) in cities. This has become a prominent economic asset in modern tourism, and more world-wide communication will lead to more interest in cultural assets elsewhere.

It is increasingly recognized that an important contribution to the destination image generation of cities originates from the attractiveness of cultural heritage. This means that cultural heritage is not only a source of historical information or place identity affecting the image of the attraction itself, but influences also the broader destination image of the city. Consequently, information provided to (potential) visitors has an impact on the destination image of cities and hence on the choice behaviour of visitors. Amsterdam, for example, has a dedicated policy that aims at strengthening its cultural profile. The city is known for its interesting connections between the (urban) past and the future, which can be experienced in a great cosmopolitan atmosphere. Clearly, cities like Barcelona, Rome, Lisbon and Prague operate on similar principles and are thus important competitors. Therefore, it is very important to know what the unique selling point of a particular city is, and how tourists can be (virtually) attracted to a tourist place. It is also important to know how important cultural heritage is for the tourism sector and for the city as a whole at the individual (micro) level. This calls for due insight into the preferences of tourists for different elements of cultural heritage, as well as the sites they actually plan to visit. A fine match between demand - bottom-up - and supply - top down - side paradigms of cultural heritage tourism, which have different urban policy consequences when pursuing the city’s objectives for sustainable utilizations, a better urban quality and development of city’s resources are then a *sine qua non* of the long-term development of city’s tourism.

The supply of e-services in the modern ICT world may be regarded as a strategic vehicle to enhance the public familiarity with urban cultural heritage through marketing channels and to increase the user satisfaction through advanced choice-aid facilities. Not only do ICTs allow firms to market their services but cultural heritage attractions may also benefit from the new options given. These options are related to the increased access to and the preservation of cultural heritage. Both form major contributors to the enhanced knowledge and appreciation of customs, artifacts, folklore, etc.

By using various e-services, the ‘consumption’ of cultural heritage is not limited to visiting the respective site but also expanded into the pre- and post- visit stages. This may influence visitors positively in terms of enjoyment and enrichment. This may increase their appreciation of cultural heritage and thus the support of its preservation. The use of ICT may also enhance the experience during the visit. Delivering dynamic and targeted information, for example, contributes to the education and satisfaction of the visitor. Offering location-based services results in people spending more time at the point of interest (e.g. a museum). To ensure the preservation of cultural heritage for future generations the implementation of appropriate systems and technologies is crucial.

E-services provided excellent opportunities to store and retrieve information in various manners and thus may significantly contribute to the preservation of cultural heritage. ICTs are in particular useful for mapping cultural heritage and the creation of inventories of various heritage assets. Furthermore, relevant documentation and descriptions, which were often only accessible to experts, have now become part of the public domain. E-heritage does not only increase awareness, but the systematic archiving of information also assists decision-makers in performing their tasks. In this manner the use of e-services in decision-support situations may result in the improvement of the quality of the decisions being made.

A balanced policy on cultural heritage tourism should, therefore, focus on both the supply and the demand side. In the present paper we will focus in particular on e-services as they are used in the city of Amsterdam.

We combine in our study results from a top-down (*viz.* the activity of municipality and institutions on a macro-level) and bottom-up (*viz.* organizing the needs of a visitors and preparing the cultural policies which comply with these needs on a micro-level) approaches,

which are complementary strategies of information processing and knowledge ordering and should be used to support each other.

This approach has become a critical and an increasingly important approach for city's positioning strategy which not only reflects the growing complexity in today's unpredictable, open, diverse and dynamic economies and business world, but also monitors the city's strategic response to this complexity environment.

## 2. DESIGN AND EVALUATION OF E-SERVICES SCENARIOS

e-Services comprise a wide variety of ICT-related facilities at both the supply and demand side of cultural heritage tourism, such as virtual tours, multi-lingual interactive maps, online booking facilities, mobile devices etc. Clearly, there are numerous packages of e-services possible as a combinational cluster of individual e-services. Several European cities have developed a wide range of new e-services and provide nowadays a broad package of facilities and cultural amenities in a destination in order to make cultural heritage more accessible, so that they can attract the maximum number of potential visitors from different places of origin.

However, the pace of the ongoing trends towards functionally richer e-services shows quite some difference, and there is a great deal of uncertainty concerning the potential advantages, failure factors, obstacles and barriers of integrated e-services for various groups of stakeholders in tourist places, with particular reference to the enhancement of advanced access to cultural heritage in cities. Thus, there is a need for a systematic analysis of the pros and cons of investment in e-services in the urban tourist sector in Europe.

Therefore, we have developed a framework for a systematic analysis of different packages of tourist e-services which are formulated in the form of policy scenarios that consistent view of what the future might turn out to be, in the context of urban cultural heritage. We will pay attention here to the question of how to design systematically packages of such potential e-services for a tourist city (in our case, Amsterdam). In this application we applied Regime analysis to evaluate the impact of those future development policy scenarios. If effects are quantitative and/or qualitative, but not valued in monetary terms, and if no standards (or critical levels) are used in the evaluation process, then the application of Regime analysis is recommended. Regime analysis concerns a so-called discrete method which is suitable for

evaluating multiple alternatives. The main advantage of the method is that it can cope with binary, ordinal, categorical and cardinal (ratio and interval scale) data (Hinloopen et al. 1984).

### *Design of an evaluation framework*

The structure of the framework contains of 7 consecutive steps to evaluate a cities' strategy for the use of e-services to promote its cultural heritage, starting with the problem definition and ending with conclusions and policy recommendations. We will now first systematically outline the various steps in our evaluation of packages of e-services in the cultural tourism sector in the case study city of Amsterdam. This can be seen as a toolkit for strategy development for other cities, which aim to enhance their tourism profile.

- Step 1: Problem definition: city strategy and objectives

In this step, for each city we specified the strategy and objectives for the promotion of cultural heritage, type of stakeholders (city marketers, decision makers, city partner representatives, etc.) involved in the design and implementation of tourist e-services, and overview/description of present available tourist e-services and tourist e-services considered. A short questionnaire survey was used to verify these strategies and objectives.

In terms of ambitions in tourism policy, Amsterdam wants to position itself in the international tourist market by not only changing or enhancing its (entire) image, but also by promoting and making the cultural heritage of the city more accessible.

In terms of objectives, Amsterdam not only wants to increase the number of visitors but to extend its footfall as well by making less well-known areas accessible to visitors. e-Services are expected to be one of the major tools to familiarize tourists with less well-known cultural heritage attractions already in advance of the actual visit of the city. Amsterdam realizes that it needs support from important stakeholders (private companies, and for instance, representatives of civic organizations) to make the implementation of e-services successful. It is of utmost importance to identify stakeholders and involve them into the process.

At present, there are already a number of e-services available in Amsterdam, such as interactive maps, booking services, journey planners and personalized information. One can find information and online booking facilities about accommodations, attractions, events, restaurants, sports, shopping, parks, museums, theaters, etc, but also practical information for the tourists'



stay in Amsterdam All information is available on maps including images and Amsterdam area statistics.

The results of the first step forms the reference situation for developing urban future development policy scenarios in Step 2.

- Step 2 Formulation of e-services alternatives (scenarios)

In our analysis, alternative packages of e-services are formulated in the form of distinct future development scenarios, by considering alternative possible outcomes (scenarios) and their implications. Starting point is the overview of the e-services currently available in Amsterdam listed in step 1. This is the reference situation for opportunities for future development of e-services to promote cultural heritage. Next, four future development policy scenarios are developed based on the full specification of e-services considered by the municipality.

The scenarios are based on two extreme dimensions: first, either an active or inactive local government intervention regarding the design and implementation of e-services, and second, either minimal or maximal socio-economic opportunities to design and implement e-services.

Taking those extremes, four policy scenarios can be derived:

1. *The winner takes it all*: active local government, maximal socio-economic opportunities;
2. *Rowing upstream*: active local government, minimal socio-economic opportunities;
3. *Don't worry, be happy*: inactive local government, maximal socio-economic opportunities;
4. *Take it as it comes*: inactive local government, minimal socio-economic opportunities.

The four scenarios are translated into four packages of e-services (as shown in table 2) specifically developed for Amsterdam. These scenarios have been assessed by the city marketers on the performance of e-services linked to each scenario.

- Step 3 Specification of criteria

Next, criteria to assess the performance of the scenarios are defined. Based on previous research in the ISAAC project a long list of 24 criteria was designed. The long list of criteria distinguishes three types of criteria: functional requirements, user requirements, and societal impacts of e-services. It is assumed that the selection of criteria is - problem and context – specific, and may differ between cities. Therefore, we provided tourism experts from Amsterdam

with the long list of criteria requesting them to select the eight most important ones for Amsterdam (see Table 1 for the final selection).

**Table 1.** Selection of criteria for Amsterdam

Type of criterion	Criterion
Functional requirement	Up to date information
	Quality of information
	Access to booking facilities
	Virtual maps
User requirements	Function
	Ease of use
	Content
Societal impact	Cultural profile

- Step 4 Elicitation of weights

A next important step is the assignment of weights to reflect the importance of the different criteria. These weights may be seen as trade-offs in a multi-criteria choice problem. The eight criteria are given weights by decision-makers considering the design and implementation of e-services in Amsterdam. They are asked to judge pairs of criteria. Based on these pair wise comparisons, weight values are determined.

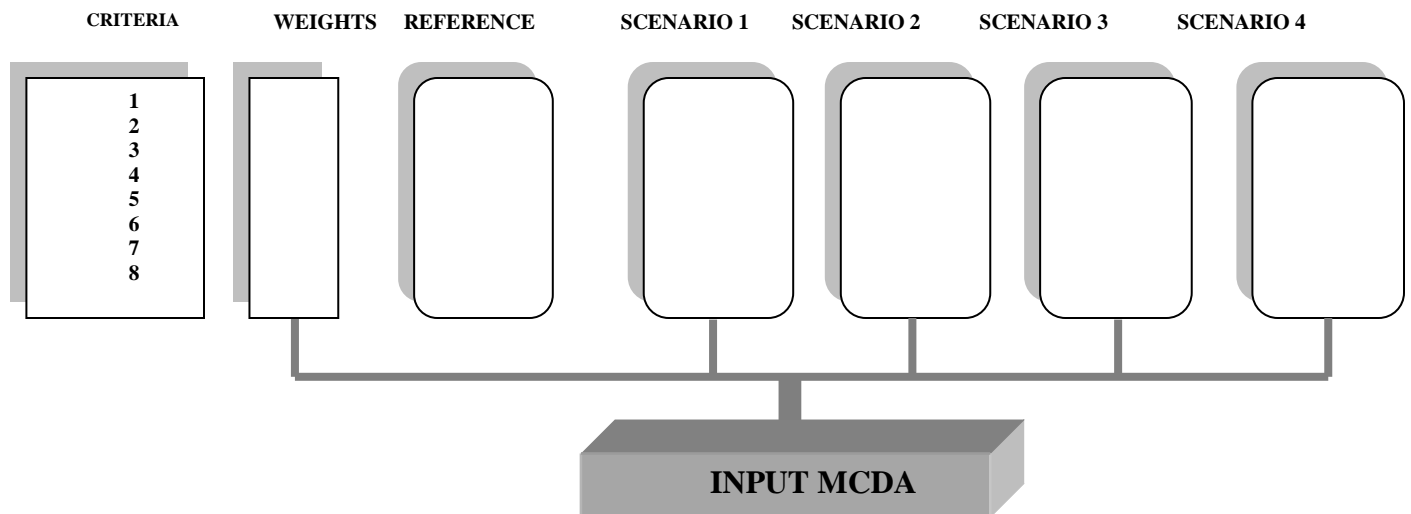
- Step 5 Assessment of impacts

Next, the criteria are scored for all scenarios in a structured way in an impact matrix, where the alternatives refer to future tourist e-service scenarios. We asked two city marketers of Amsterdam to assess the criteria for the four scenarios.

- Step 6 Analysis of performance of alternatives (scenarios)

Finally, the evaluation process led to the application of Regime analysis, which combines the information contained in the impact matrix and the set of weights to calculate a performance

score for each scenario. The scenarios are then ranked according to the preferences, given the difference in scores of the scenarios for each criterion and the weight of the respective criterion.



**Figure 1.** Input MCDA

This result forms the basis for policy conclusions and strategies on the use of e-services in the city.

- **Step 7 Policy implications and conclusions**

In the final the step of an evaluation process conclusions are drawn and policy recommendations are made. The results are discussed below.

*Results of the case study research*

The results of the Regime analysis are straightforward: scenario 1 in which there is an active government involvement and maximal socio-economic opportunities outperforms all other scenarios. The opposite scenario 4 scored worst. This was to be expected: the first scenario offered by far the most and the best e-services, the latter by far the least and poorest.. Of course, this is mainly due to the package of e-services offered in each scenario (see Table 2).

**Table 2.** Supply of e-services in the four distinguished scenarios

<i>Package scenario 1</i>	<i>Package scenario 2</i>
Multi-lingual virtual tours	Virtual tours
Multi-lingual interactive maps	Interactive maps
Multi-lingual online booking facilities	Online booking facilities
Multi-lingual journey planners	Journey planners
Multi-lingual personalized information	Personalized information
Multi-lingual e-forum/e-participation	E-forum/e-participation
Multi-lingual mobile devices	Mobile devices
All contents downloadable/printable	All contents downloadable/printable
<i>Package scenario 3</i>	<i>Package scenario 4</i>
Virtual tours	Virtual tours
Interactive maps	Interactive maps
Online booking facilities	Online booking facilities
Journey planners	Journey planners
Personalized information	Personalized information
All contents downloadable/printable	

After performing a sensitivity analysis in which the weights are adjusted to see the effect on the results, some robust conclusions can be drawn. The sensitivity analysis shows that, no matter what set of weights are used in the Regime analysis, package 1 will always attain the first position. The main improvement seems to be to make them multi-lingual. This is the difference in the e-service package of scenario 1 compared to scenario 2. At present, most e-services are available in Dutch and English. There is a need for German, French and Spanish versions as well. According to local experts the quality of the languages is very important: the translations should be done by native speakers.

Secondly, the main element lacking in the e-service package of scenario 4 compared to all other scenarios is downloadable/printable content. In the sensitivity analysis scenario 4 always remained fourth in rank. This is an indication that downloadable/printable content is an important e-service as well.

The difference between scenario 2 and scenario 3 concerns ‘e-participation/e-forum’ and ‘mobile devices’, which are included in scenario 2 and lacking in scenario 3. Nevertheless, scenario 3 performs nearly as well as scenario 2. Thus, e-participation/e-forum and mobile devices seem not to be of significant importance for tourism policy.

In conclusion, the city of Amsterdam should focus on the development of multi-lingual e-services and downloadable/printable content. E-participation/e-forum and mobile devices seem less important.

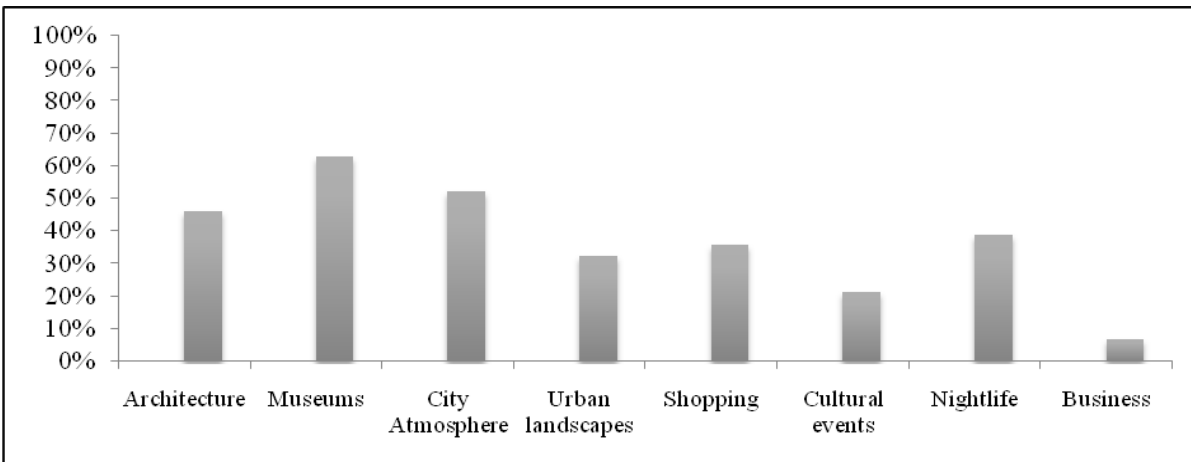
### 3. USERS OF E-SERVICES IN CULTURAL HERITAGE TOURISM

Apart from consulting policymakers and experts about the best way to use e-services to increase visitors at places of special cultural interest, also the tourists themselves were asked about their preferences for different kinds of e-services. In this section, we focus on tourists and their appreciation of e-services from a bottom-up perspective, which starts with the already identified needs, aspirations, dreams and hopes of tourists.

The data used for this analysis were collected by user surveys carried out in the city of Amsterdam between August and November 2007 (see ISAAC D1.4). These surveys involved extensive field data collection by interview teams who were hired and professionally trained. The questionnaires used both online and face-to-face interview modes (stand-alone computer versions or paper versions). In total, around 650 tourists filled out a questionnaire.

#### *First insights*

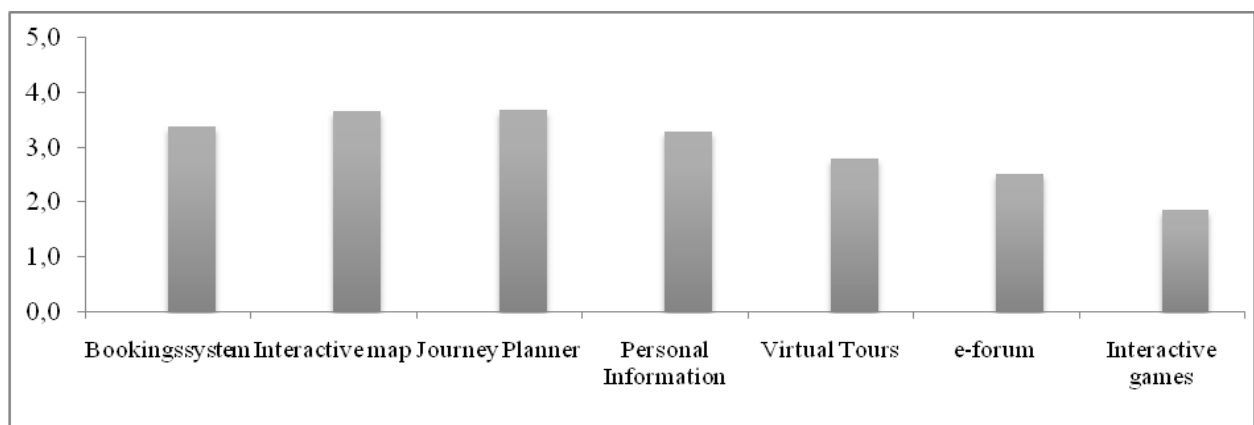
Heritage-related activities, such as museum visits, are fundamental for the overall tourism experience. Timothy and Boyd (2003) state that 40 per cent of tourism trips include a heritage related activity. The tourists that visited Amsterdam were asked what they planned to visit and how they will spend their time in the city. The results are shown in Figure 1. It appears that Amsterdam is oftentimes visited because of the museums, atmosphere, the architecture and nightlife. Cultural events and business are less often a reason to visit Amsterdam.



**Figure 2.** The share of tourists in Amsterdam that planned to visit different kinds of attractions

From the underlying data it appears that the more ‘tangible’ cultural heritage attractions (architecture, museums, and monuments) are on average valued higher than the intangible aspects of cultural heritage (traditions, customs, and knowledge). In addition, we can observe that older people value cultural heritage significantly higher than younger people do. Furthermore, it seems that there is a slight increase in appreciation of cultural heritage when a tourist has a higher educational degree.

When looking at the appreciation of e-services, it appears that the more ‘traditional’ e-services (e.g. booking system or interactive map) are appreciated more than the more ‘modern’ e-services (e.g. e-forum or interactive games), as is shown in Figure 2.



**Figure 3.** Appreciation of e-services by tourists visiting Amsterdam

From this first analysis, gender, the level of income and the educational degree appear not to be related to the general use of e-services. The goal of the trip seems to be more important: people who are visiting the city for business tend to use more often a form of e-service.

### *Results of the ordered logit model*

In the survey, respondents were asked to value several e-services (such as online booking, virtual tours, journey planner, etc.). Since these valuations e-services are captured into discrete (in contrast to continuous) dependent variables – ranging from ‘not important’ to ‘very important’ in five categories – standard regression tools are not directly applicable. Fortunately, appropriate discrete choice models are available to study how the individual characteristics of respondents influence the valuation of cultural heritage. In this section we use an ordered logit model, an econometric tool frequently used in applied behavioural research (Hensher et al. 2005), to see which tourists favour the distinguished e-services. The ordered probability model is an extension of the binary probability model, whereby the dependent (qualitative) variable has a limited number of ordered outcomes. The requirement of ordering is necessary, and this is present in the cultural heritage survey; the level of importance indicated by the respondents is a clear example of a discrete ordered (ranked) dependent variable.

Table 3 shows the results of the ordered logit model that estimates the preferences of tourists with different characteristic for different kinds of e-services. Not very surprising, it appears that tourists that already use e-services, in general have a higher appreciation of the different e-services. Especially, the appreciation of a booking service increases with the use of e-services. A reason for this can be that people who used e-services before experienced that using them in planning and organizing a trip is useful, therefore showing a higher appreciation of different e-services. Furthermore, we observe that education has a mixed effect. In general, when the coefficient of this variable is significant, education has a negative impact on the appreciation of different e-services. E-forums, virtual tours, personalized information and interactive games are more ‘modern’ and ‘trendy’ forms of e-services and are more appreciated by less educated tourists.

**Table 3.** Coefficients of the ordered logit models estimating the preferences of tourists in Amsterdam for different types of ES

	Inter-active map	Personalised information	Booking service	Journey planner	e-Forum	Virtual Tours	Interactive games
E-service	0.497*** (0.156)	0.343** (0.153)	1.156*** (0.164)	0.373** (0.157)	0.362** (0.147)	0.193 (0.152)	0.091 (0.168)
Education	0.074 (0.062)	-0.205*** (0.065)	0.055 (0.065)	0.026 (0.059)	-0.210*** (0.063)	-0.124* (0.065)	-0.339*** (0.070)
Gender	0.082 (0.147)	-0.070 (0.145)	-0.065 (0.148)	0.158 (0.144)	-0.094 (0.142)	-0.294** (0.143)	-0.423*** (0.161)
Age	-0.189* (0.114)	-0.182 (0.117)	-0.248** (0.116)	-0.103 (0.107)	-0.470*** (0.107)	0.011 (0.114)	-0.434*** (0.123)
Employed	0.317** (0.160)	-0.026 (0.163)	0.098 (0.157)	0.167 (0.152)	0.177 (0.152)	0.186 (0.152)	-0.054 (0.178)
USA	0.814*** (0.217)	0.706*** (0.235)	0.755*** (0.241)	-0.294 (0.214)	0.261 (0.215)	0.341 (0.228)	-0.171 (0.252)
UK	0.594** (0.245)	0.601** (0.262)	0.680*** (0.234)	0.368 (0.244)	0.254 (0.251)	0.458* (0.235)	0.675*** (0.259)
Germany	0.328 (0.233)	0.247 (0.234)	-0.047 (0.243)	-0.808*** (0.232)	-0.070 (0.232)	0.052 (0.231)	0.131 (0.273)
Rest of Europe	0.894*** (0.217)	0.792*** (0.225)	0.593*** (0.221)	-0.500** (0.219)	0.460** (0.230)	0.396* (0.214)	0.286 (0.248)
Rest of the world	0.823** (0.331)	1.021*** (0.278)	1.315*** (0.291)	-0.471 (0.303)	0.735*** (0.260)	0.283 (0.272)	0.351 (0.315)
Observations	650	651	651	651	651	651	650
Log Likelihood	-930.711	-979.054	-905.722	-986.545	-959.905	-1010.997	-759.831

Significant at \*\*\* 0.01, \*\* 0.05 and \* 0.10 levels.

Gender only has a statistically significant impact on the appreciation of virtual tours and interactive games. It appears that men value these e-services higher than women. In addition, also younger tourists favour these kinds of e-services. More generally, younger people tend to find e-services more important than older people. Possibly, older people do not know how to access certain e-services. This is confirmed by the statistically significant coefficients of the appreciation of e-forums and interactive games.

Concerning the country of residence it appears that tourists from USA or Canada value certain e-services (interactive maps, personalized information and booking services, respectively) higher than tourists from the Netherlands. Perhaps these e-services are already more frequently used in the United States or Canada. Also, tourists from UK, Ireland and the rest of the world value e-services in general higher than tourists from the Netherlands. This means



that in particular these e-services should be available in different languages as was proposed by the Amsterdam tourism experts.

#### 4. CONCLUDING REMARKS

e-Services have turned into a strategic vehicle for modern tourist policy. The availability and access to advanced e-services have a significant impact on tourist behaviour. Not only has the scouting for tourist destinations and facilities changed significantly (though the use of internet services), but also the organization and booking of trips. Furthermore, on site facilities (such as multi-lingual devices for foreign tourists, mobile phone services) have been widely introduced.

In this article, we combined insights obtained from tourism experts with insights obtained from the users of e-services about the usefulness of different services by popularizing the unique elements of the city and providing more accessible information through the use of e-services regarding that heritage. Amsterdam not only wants to increase the number of visitors but to extend its footfall as well by making less well-known areas accessible to visitors. e-Services are expected to be one of the major tools to familiarize tourists with less well-known cultural heritage attractions already in advance of the actual visit of the city.

From the top-down approach, using scenarios and multi-criteria analysis, it appears that the decision makers and marketers of Amsterdam consider multilingual features (including French and German), as well as downloadable or printable content very important e-services for Amsterdam. Currently, they attach less value to an e-forum or mobile devices. However, according to the discrete choice analysis of preferences of visitors, the bottom-up approach, an e-forum, as well as interactive games could be useful tools for attracting (younger) intangible cultural heritage fans. These tools could also be useful in changing the image of the city under younger visitors, one of the goals of the city

At present, most e-services are available in Dutch and English. However, the tourism experts of Amsterdam indicated that there is a need for German, French and Spanish versions as well. This is confirmed by the preferences of the tourists: international tourists, from all over the world, have higher preferences for interactive maps and online bookings than Dutch visitors. According to local experts the quality of the languages is very important: the translations should be done by native speakers.

## ACKNOWLEDGEMENT

The authors which to thank Egbert Wolf of the Municipality of Amsterdam for his assistance in the empirical application of the research for the city of Amsterdam.

## REFERENCES

- Forte, F., Fusco Girard, L., and Nijkamp, P. (2006), Smart Policy, Creative Strategy and Urban Development, Studies in Regional Science, 35 (4): 947-963.
- Fusco Girard, L., and Nijkamp, P. (2009), Cultural Tourism and Sustainable Development (eds.), Ashgate, Aldershot, UK.
- Hensher, D. A., Rose J. M., and Green W.H. (2005), Applied Choice Analysis: A Primer, Cambridge, Cambridge University Press.
- Hinloopen, E., Nijkamp P. and Rietveld P. (1984), The Regime Method; a New Multicriteria Method. Essays and Surveys on Multiple Criteria Decision Making. P. Hansen. Berlin, Springer, pp. 146-155.
- ISAAC D1.4 (2007), Report on Users Requirements for ISAAC e-Services Using Conjoint Analysis, ISAAC deliverable 1.4.
- Matias, A., Nijkamp P. and Neto P. (2008), Advances in Modern Tourism Research (eds.), Springer – Verlag, Berlin.
- Spence, M. (2004), Efficiency and Personalization as Value Creation in Internationalizing High-Technology SMEs, Canadian Journal of Administrative Sciences; ABI/INFORM Global: pg. 65-78.
- Timothy, D.J., Boyd, S.W. (2003). Heritage Tourism, themes in tourism. Pearson Education.

2007-1	M. Francesca Cracolici Miranda Cuffaro Peter Nijkamp	Geographical distribution of enemployment: An analysis of provincial differences in Italy, 21 p.
2007-2	Daniel Leliefeld Evgenia Motchenkova	To protect in order to serve, adverse effects of leniency programs in view of industry asymmetry, 29 p.
2007-3	M.C. Wassenaar E. Dijkgraaf R.H.J.M. Gradus	Contracting out: Dutch municipalities reject the solution for the VAT-distortion, 24 p.
2007-4	R.S. Halbersma M.C. Mikkers E. Motchenkova I. Seinen	Market structure and hospital-insurer bargaining in the Netherlands, 20 p.
2007-5	Bas P. Singer Bart A.G. Bossink Herman J.M. Vande Putte	Corporate Real estate and competitive strategy, 27 p.
2007-6	Dorien Kooij Annet de Lange Paul Jansen Josje Dijkers	Older workers' motivation to continue to work: Five meanings of age. A conceptual review, 46 p.
2007-7	Stella Flytzani Peter Nijkamp	Locus of control and cross-cultural adjustment of expatriate managers, 16 p.
2007-8	Tibert Verhagen Willemijn van Dolen	Explaining online purchase intentions: A multi-channel store image perspective, 28 p.
2007-9	Patrizia Riganti Peter Nijkamp	Congestion in popular tourist areas: A multi-attribute experimental choice analysis of willingness-to-wait in Amsterdam, 21 p.
2007-10	Tüzin Baycan-Levent Peter Nijkamp	Critical success factors in planning and management of urban green spaces in Europe, 14 p.
2007-11	Tüzin Baycan-Levent Peter Nijkamp	Migrant entrepreneurship in a diverse Europe: In search of sustainable development, 18 p.
2007-12	Tüzin Baycan-Levent Peter Nijkamp Mediha Sahin	New orientations in ethnic entrepreneurship: Motivation, goals and strategies in new generation ethnic entrepreneurs, 22 p.
2007-13	Miranda Cuffaro Maria Francesca Cracolici Peter Nijkamp	Measuring the performance of Italian regions on social and economic dimensions, 20 p.

2007-14	Tüzin Baycan-Levent Peter Nijkamp	Characteristics of migrant entrepreneurship in Europe, 14 p.
2007-15	Maria Teresa Borzacchiello Peter Nijkamp Eric Koomen	Accessibility and urban development: A grid-based comparative statistical analysis of Dutch cities, 22 p.
2007-16	Tibert Verhagen Selmar Meents	A framework for developing semantic differentials in IS research: Assessing the meaning of electronic marketplace quality (EMQ), 64 p.
2007-17	Aliye Ahu Gülümser Tüzin Baycan Levent Peter Nijkamp	Changing trends in rural self-employment in Europe, 34 p.
2007-18	Laura de Dominicis Raymond J.G.M. Florax Henri L.F. de Groot	De ruimtelijke verdeling van economische activiteit: Agglomeratie- en locatiepatronen in Nederland, 35 p.
2007-19	E. Dijkgraaf R.H.J.M. Gradus	How to get increasing competition in the Dutch refuse collection market? 15 p.

2008-1	Maria T. Borzacchiello Irene Casas Biagio Ciuffo Peter Nijkamp	Geo-ICT in Transportation Science, 25 p.
2008-2	Maura Soekijad Jeroen Walschots Marleen Huysman	Congestion at the floating road? Negotiation in networked innovation, 38 p.
2008-3	Marlous Agterberg Bart van den Hooff Marleen Huysman Maura Soekijad	Keeping the wheels turning: Multi-level dynamics in organizing networks of practice, 47 p.
2008-4	Marlous Agterberg Marleen Huysman Bart van den Hooff	Leadership in online knowledge networks: Challenges and coping strategies in a network of practice, 36 p.
2008-5	Bernd Heidergott Haralambie Leahu	Differentiability of product measures, 35 p.
2008-6	Tibert Verhagen Frans Feldberg Bart van den Hooff Selmar Meents	Explaining user adoption of virtual worlds: towards a multipurpose motivational model, 37 p.
2008-7	Masagus M. Ridhwan Peter Nijkamp Piet Rietveld Henri L.F. de Groot	Regional development and monetary policy. A review of the role of monetary unions, capital mobility and locational effects, 27 p.
2008-8	Selmar Meents Tibert Verhagen	Investigating the impact of C2C electronic marketplace quality on trust, 69 p.
2008-9	Junbo Yu Peter Nijkamp	China's prospects as an innovative country: An industrial economics perspective, 27 p
2008-10	Junbo Yu Peter Nijkamp	Ownership, r&d and productivity change: Assessing the catch-up in China's high-tech industries, 31 p
2008-11	Elbert Dijkgraaf Raymond Gradus	Environmental activism and dynamics of unit-based pricing systems, 18 p.
2008-12	Mark J. Koetse Jan Rouwendal	Transport and welfare consequences of infrastructure investment: A case study for the Betuweroute, 24 p
2008-13	Marc D. Bahlmann Marleen H. Huysman Tom Elfring Peter Groenewegen	Clusters as vehicles for entrepreneurial innovation and new idea generation – a critical assessment
2008-14	Soushi Suzuki Peter Nijkamp	A generalized goals-achievement model in data envelopment analysis: An application to efficiency improvement in local government finance in Japan, 24 p.
2008-15	Tüzin Baycan-Levent	External orientation of second generation migrant entrepreneurs. A sectoral

	Peter Nijkamp Mediha Sahin	study on Amsterdam, 33 p.
2008-16	Enno Masurel	Local shopkeepers' associations and ethnic minority entrepreneurs, 21 p.
2008-17	Frank Frößler Boriana Rukanova Stefan Klein Allen Higgins Yao-Hua Tan	Inter-organisational network formation and sense-making: Initiation and management of a living lab, 25 p.
2008-18	Peter Nijkamp Frank Zwetsloot Sander van der Wal	A meta-multicriteria analysis of innovation and growth potentials of European regions, 20 p.
2008-19	Junbo Yu Roger R. Stough Peter Nijkamp	Governing technological entrepreneurship in China and the West, 21 p.
2008-20	Maria T. Borzacchiello Peter Nijkamp Henk J. Scholten	A logistic regression model for explaining urban development on the basis of accessibility: a case study of Naples, 13 p.
2008-21	Marius Ooms	Trends in applied econometrics software development 1985-2008, an analysis of Journal of Applied Econometrics research articles, software reviews, data and code, 30 p.
2008-22	Aliye Ahu Gülümser Tüzin Baycan-Levent Peter Nijkamp	Changing trends in rural self-employment in Europe and Turkey, 20 p.
2008-23	Patricia van Hemert Peter Nijkamp	Thematic research prioritization in the EU and the Netherlands: an assessment on the basis of content analysis, 30 p.
2008-24	Jasper Dekkers Eric Koomen	Valuation of open space. Hedonic house price analysis in the Dutch Randstad region, 19 p.

2009-1	Boriana Rukanova Rolf T. Wignand Yao-Hua Tan	From national to supranational government inter-organizational systems: An extended typology, 33 p.
2009-2	Marc D. Bahlmann Marleen H. Huysman Tom Elfring Peter Groenewegen	Global Pipelines or global buzz? A micro-level approach towards the knowledge-based view of clusters, 33 p.
2009-3	Julie E. Ferguson Marleen H. Huysman	Between ambition and approach: Towards sustainable knowledge management in development organizations, 33 p.
2009-4	Mark G. Leijssen	Why empirical cost functions get scale economies wrong, 11 p.
2009-5	Peter Nijkamp Galit Cohen-Blankshtain	The importance of ICT for cities: e-governance and cyber perceptions, 14 p.
2009-6	Eric de Noronha Vaz Mário Caetano Peter Nijkamp	Trapped between antiquity and urbanism. A multi-criteria assessment model of the greater Cairo metropolitan area, 22 p.
2009-7	Eric de Noronha Vaz Teresa de Noronha Vaz Peter Nijkamp	Spatial analysis for policy evaluation of the rural world: Portuguese agriculture in the last decade, 16 p.
2009-8	Teresa de Noronha Vaz Peter Nijkamp	Multitasking in the rural world: Technological change and sustainability, 20 p.
2009-9	Maria Teresa Borzacchiello Vincenzo Torrieri Peter Nijkamp	An operational information systems architecture for assessing sustainable transportation planning: Principles and design, 17 p.
2009-10	Vincenzo Del Giudice Pierfrancesco De Paola Francesca Torrieri Francesca Pagliari Peter Nijkamp	A decision support system for real estate investment choice, 16 p.
2009-11	Miruna Mazurencu Marinescu Peter Nijkamp	IT companies in rough seas: Predictive factors for bankruptcy risk in Romania, 13 p.
2009-12	Boriana Rukanova Helle Zinner Hendriksen Eveline van Stijn Yao-Hua Tan	Bringing is innovation in a highly-regulated environment: A collective action perspective, 33 p.
2009-13	Patricia van Hemert Peter Nijkamp Jolanda Verbraak	Evaluating social science and humanities knowledge production: an exploratory analysis of dynamics in science systems, 20 p.

2009-14	Roberto Patuelli Aura Reggiani Peter Nijkamp Norbert Schanne	Neural networks for cross-sectional employment forecasts: A comparison of model specifications for Germany, 15 p.
2009-15	André de Waal Karima Kourtit Peter Nijkamp	The relationship between the level of completeness of a strategic performance management system and perceived advantages and disadvantages, 19 p.
2009-16	Vincenzo Punzo Vincenzo Torrieri Maria Teresa Borzacchiello Biagio Ciuffo Peter Nijkamp	Modelling intermodal re-balance and integration: planning a sub-lagoon tube for Venezia, 24 p.
2009-17	Peter Nijkamp Roger Stough Mediha Sahin	Impact of social and human capital on business performance of migrant entrepreneurs – a comparative Dutch-US study, 31 p.
2009-18	Dres Creal	A survey of sequential Monte Carlo methods for economics and finance, 54 p.
2009-19	Karima Kourtit André de Waal	Strategic performance management in practice: Advantages, disadvantages and reasons for use, 15 p.
2009-20	Karima Kourtit André de Waal Peter Nijkamp	Strategic performance management and creative industry, 17 p.
2009-21	Eric de Noronha Vaz Peter Nijkamp	Historico-cultural sustainability and urban dynamics – a geo-information science approach to the Algarve area, 25 p.
2009-22	Roberta Capello Peter Nijkamp	Regional growth and development theories revisited, 19 p.
2009-23	M. Francesca Cracolici Miranda Cuffaro Peter Nijkamp	Tourism sustainability and economic efficiency – a statistical analysis of Italian provinces, 14 p.
2009-24	Caroline A. Rodenburg Peter Nijkamp Henri L.F. de Groot Erik T. Verhoef	Valuation of multifunctional land use by commercial investors: A case study on the Amsterdam Zuidas mega-project, 21 p.
2009-25	Katrin Oltmer Peter Nijkamp Raymond Florax Floor Brouwer	Sustainability and agri-environmental policy in the European Union: A meta-analytic investigation, 26 p.
2009-26	Francesca Torrieri Peter Nijkamp	Scenario analysis in spatial impact assessment: A methodological approach, 20 p.
2009-27	Aliye Ahu Gülümser Tüzin Baycan-Levent Peter Nijkamp	Beauty is in the eyes of the beholder: A logistic regression analysis of sustainability and locality as competitive vehicles for human settlements, 14 p.



2009-28	Marco Percoco Peter Nijkamp	Individual time preferences and social discounting in environmental projects, 24 p.
2009-29	Peter Nijkamp Maria Abreu	Regional development theory, 12 p.
2009-30	Tüzin Baycan-Levent Peter Nijkamp	7 FAQs in urban planning, 22 p.
2009-31	Aliye Ahu Gülümser Tüzin Baycan-Levent Peter Nijkamp	Turkey's rurality: A comparative analysis at the EU level, 22 p.
2009-32	Frank Bruinsma Karima Kourtit Peter Nijkamp	An agent-based decision support model for the development of e-services in the tourist sector, 21 p.
2009-33	Mediha Sahin Peter Nijkamp Marius Rietdijk	Cultural diversity and urban innovativeness: Personal and business characteristics of urban migrant entrepreneurs, 27 p.
2009-34	Peter Nijkamp Mediha Sahin	Performance indicators of urban migrant entrepreneurship in the Netherlands, 28 p.
2009-35	Manfred M. Fischer Peter Nijkamp	Entrepreneurship and regional development, 23 p.
2009-36	Faroek Lazrak Peter Nijkamp Piet Rietveld Jan Rouwendal	Cultural heritage and creative cities: An economic evaluation perspective, 20 p.
2009-37	Enno Masurel Peter Nijkamp	Bridging the gap between institutions of higher education and small and medium-size enterprises, 32 p.
2009-38	Francesca Medda Peter Nijkamp Piet Rietveld	Dynamic effects of external and private transport costs on urban shape: A morphogenetic perspective, 17 p.
2009-39	Roberta Capello Peter Nijkamp	Urban economics at a cross-yard: Recent theoretical and methodological directions and future challenges, 16 p.
2009-40	Enno Masurel Peter Nijkamp	The low participation of urban migrant entrepreneurs: Reasons and perceptions of weak institutional embeddedness, 23 p.
2009-41	Patricia van Hemert Peter Nijkamp	Knowledge investments, business R&D and innovativeness of countries. A qualitative meta-analytic comparison, 25 p.
2009-42	Teresa de Noronha Vaz Peter Nijkamp	Knowledge and innovation: The strings between global and local dimensions of sustainable growth, 16 p.
2009-43	Chiara M. Traversi Peter Nijkamp	Managing environmental risk in agriculture: A systematic perspective on the potential of quantitative policy-oriented risk valuation, 19 p.
2009-44	Sander de Leeuw	Logistics aspects of emergency preparedness in flood disaster prevention, 24 p.

Iris F.A. Vis  
Sebastiaan B. Jonkman

- |         |   |   |
|---------|---|---|
| 2009-45 | Eveline S. van Leeuwen<br>Peter Nijkamp   | Social accounting matrices. The development and application of SAMs at the local level, 26 p.                                 |
| 2009-46 | Tibert Verhagen<br>Willemijn van Dolen  | The influence of online store characteristics on consumer impulsive decision-making: A model and empirical application, 33 p. |
| 2009-47 | Eveline van Leeuwen<br>Peter Nijkamp  | A micro-simulation model for e-services in cultural heritage tourism, 23 p.   |
| 2009-48 | Andrea Caragliu<br>Chiara Del Bo<br>Peter Nijkamp   | Smart cities in Europe, 15 p.   |
| 2009-49 | Farook Lazrak<br>Peter Nijkamp<br>Piet Rietveld<br>Jan Rouwendal                              | Cultural heritage: Hedonic prices for non-market values, 11 p.  |
| 2009-50 | Eric de Noronha Vaz<br>João Pedro Bernardes<br>Peter Nijkamp                                  | Past landscapes for the reconstruction of Roman land use: Eco-history tourism in the Algarve, 23 p.                           |
| 2009-51 | Eveline van Leeuwen<br>Peter Nijkamp<br>Teresa de Noronha Vaz                                 | The Multi-functional use of urban green space, 12 p.  |
| 2009-52 | Peter Bakker<br>Carl Koopmans<br>Peter Nijkamp  | Appraisal of integrated transport policies, 20 p.   |
| 2009-53 | Luca De Angelis<br>Leonard J. Paas  | The dynamics analysis and prediction of stock markets through the latent Markov model, 29 p.                                  |
| 2009-54 | Jan Anne Annema<br>Carl Koopmans  | Een lastige praktijk: Ervaringen met waarderen van omgevingskwaliteit in de kosten-batenanalyse, 17 p.                        |
| 2009-55 | Bas Straathof<br>Gert-Jan Linders   | Europe's internal market at fifty: Over the hill? 39 p.   |
| 2009-56 | Joaquim A.S. Gromicho<br>Jelke J. van Hoorn<br>Francisco Saldanha-da-Gama<br>Gerrit T. Timmer | Exponentially better than brute force: solving the job-shop scheduling problem optimally by dynamic programming, 14 p.        |
| 2009-57 | Carmen Lee<br>Roman Kraeussl<br>Leo Paas  | The effect of anticipated and experienced regret and pride on investors' future selling decisions, 31 p.                      |
| 2009-58 | René Sitters  | Efficient algorithms for average completion time scheduling, 17 p.  |

2009-59

Masood Gheasi  
Peter Nijkamp  
Piet Rietveld

Migration and tourist flows, 20 p.

2010-1	Roberto Patuelli Norbert Schanne Daniel A. Griffith Peter Nijkamp	Persistent disparities in regional unemployment: Application of a spatial filtering approach to local labour markets in Germany, 28 p.
2010-2	Thomas de Graaff Ghebre Debrezion Piet Rietveld	Schaalsprong Almere. Het effect van bereikbaarheidsverbeteringen op de huizenprijzen in Almere, 22 p.
2010-3	John Steenbruggen Maria Teresa Borzacchiello Peter Nijkamp Henk Scholten	Real-time data from mobile phone networks for urban incidence and traffic management – a review of application and opportunities, 23 p.
2010-4	Marc D. Bahlmann Tom Elfring Peter Groenewegen Marleen H. Huysman	Does distance matter? An ego-network approach towards the knowledge-based theory of clusters, 31 p.
2010-5	Jelke J. van Hoorn	A note on the worst case complexity for the capacitated vehicle routing problem, 3 p.
2010-6	Mark G. Lijesen	Empirical applications of spatial competition; an interpretative literature review, 16 p.
2010-7	Carmen Lee Roman Kraeussl Leo Paas	Personality and investment: Personality differences affect investors' adaptation to losses, 28 p.
2010-8	Nahom Ghebrihiwet Evgenia Motchenkova	Leniency programs in the presence of judicial errors, 21 p.
2010-9	Meindert J. Flikkema Ard-Pieter de Man Matthijs Wolters	New trademark registration as an indicator of innovation: results of an explorative study of Benelux trademark data, 53 p.
2010-10	Jani Merikivi Tibert Verhagen Frans Feldberg	Having belief(s) in social virtual worlds: A decomposed approach, 37 p.
2010-11	Umut Kilingç	Price-cost markups and productivity dynamics of entrant plants, 34 p.
2010-12	Umut Kilingç	Measuring competition in a frictional economy, 39 p.

2011-1	Yoshifumi Takahashi Peter Nijkamp	Multifunctional agricultural land use in sustainable world, 25 p.
2011-2	Paulo A.L.D. Nunes Peter Nijkamp	Biodiversity: Economic perspectives, 37 p.
2011-3	Eric de Noronha Vaz Doan Nainggolan Peter Nijkamp Marco Painho	A complex spatial systems analysis of tourism and urban sprawl in the Algarve, 23 p.
2011-4	Karima Kourtit Peter Nijkamp	Strangers on the move. Ethnic entrepreneurs as urban change actors, 34 p.
2011-5	Manie Geyer Helen C. Coetzee Danie Du Plessis Ronnie Donaldson Peter Nijkamp	Recent business transformation in intermediate-sized cities in South Africa, 30 p.
2011-6	Aki Kangasharju Christophe Tavera Peter Nijkamp	Regional growth and unemployment. The validity of Okun's law for the Finnish regions, 17 p.
2011-7	Amitrajeet A. Batabyal Peter Nijkamp	A Schumpeterian model of entrepreneurship, innovation, and regional economic growth, 30 p.
2011-8	Aliye Ahu Akgün Tüzin Baycan Levent Peter Nijkamp	The engine of sustainable rural development: Embeddedness of entrepreneurs in rural Turkey, 17 p.
2011-9	Aliye Ahu Akgün Eveline van Leeuwen Peter Nijkamp	A systemic perspective on multi-stakeholder sustainable development strategies, 26 p.
2011-10	Tibert Verhagen Jaap van Nes Frans Feldberg Willemijn van Dolen	Virtual customer service agents: Using social presence and personalization to shape online service encounters, 48 p.
2011-11	Henk J. Scholten Maarten van der Vlist	De inrichting van crisisbeheersing, de relatie tussen besluitvorming en informatievoorziening. Casus: Warroom project Netcentrisch werken bij Rijkswaterstaat, 23 p.
2011-12	Tüzin Baycan Peter Nijkamp	A socio-economic impact analysis of cultural diversity, 22 p.
2011-13	Aliye Ahu Akgün Tüzin Baycan Peter Nijkamp	Repositioning rural areas as promising future hot spots, 22 p.
2011-14	Selmar Meents Tibert Verhagen Paul Vlaar	How sellers can stimulate purchasing in electronic marketplaces: Using information as a risk reduction signal, 29 p.p

2011-15	Aliye Ahu Gülümser Tüzin Baycan-Levent Peter Nijkamp	Measuring regional creative capacity: A literature review for rural-specific approaches, 22 p.
2011-16	Frank Bruinsma Karima Kourtit Peter Nijkamp	Tourism, culture and e-services: Evaluation of e-services packages, 30 p.
2011-17	Peter Nijkamp Frank Bruinsma Karima Kourtit Eveline van Leeuwen	Supply of and demand for e-services in the cultural sector: Combining top-down and bottom-up perspectives, 16 p.